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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/760,663	01/20/2004	Daniel Sabatino	67,097-018; EH-10933	1079
26096	7590	12/29/2005	EXAMINER	
CARLSON, GASKEY & OLDS, P.C. 400 WEST MAPLE ROAD SUITE 350 BIRMINGHAM, MI 48009			KIM, TAE JUN	
			ART UNIT	PAPER NUMBER
			3746	

DATE MAILED: 12/29/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/760,663

Applicant(s)

SABATINO ET AL.

Examiner

Ted Kim

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11/02/2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 11-36 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 11-36 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 11-36 are rejected under 35 U.S.C. 102(e) as being anticipated by Huang (2004/0194627). Huang teaches a method of thermal management for a gas turbine engine comprising the steps of: (1) deoxygenating a fuel in 16 to provide a deoxygenated fuel; (2) communicating the fuel 24 through a first liquid-to-liquid heat exchanger system 24 (page 2, paragraph 27 and paragraph 46) or alternately an upstream of the high temperature sources 22 (see end of paragraph 34) operable at a first maximum temperature; (3) communicating the deoxygenated fuel through a second liquid-to-liquid heat exchanger system 22 or a downstream of 22 (see end of paragraph 24) operable at a second maximum temperature, said second maximum temperature greater than said first maximum temperature; said step (2) further comprises the step of: communicating the deoxygenated fuel and an oil through the first liquid-to-liquid heat exchanger 24 or upstream one of 22, the oil effective above approximately 325 degrees Fahrenheit (note that it is inherent that if the fuel is getting as hot as up to 325 or even 900 F, then the oil

transferring the heat to the fuel must be hotter than the fuel) and preventing the oil from exceeding approximately 325 degrees Fahrenheit (inherent, as the temperature of the fuel may be set lower than 325); communicating the oil through an oil loop in communication with a subsystem which can not exceed approximately 325 degrees Fahrenheit; wherein said step (3) further comprises the step of: communicating the deoxygenated fuel and an oil through the second liquid-to-liquid heat exchanger, the oil effective above approximately 325 degrees Fahrenheit and permitting the deoxygenated fuel to exceed 325 degrees Fahrenheit; communicating the deoxygenated fuel through a fuel pump 20 after said step (2); communicating the deoxygenated fuel from the first liquid-to-liquid heat exchanger to the second liquid-to-liquid heat exchanger; communicating the oil within the first loop with an aircraft generator subsystem (page 4, paragraph 46, teach generator heat loads are cooled and engine oil systems are combinations thereof are cooled); communicating the oil within the first oil loop with an engine fan gear subsystem (page 4, paragraph 46 teach the fan drive gear system heat loads and engine oil systems and combinations thereof are cooled).

The applied reference has a common inventor with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 11-17, 19-21, 23-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Coffinberry (4,020,632) in view of either Sauer (6,604,558) or Spadaccini et al (6,315,815) and optionally in view of Mullin (4,879,052). Coffinberry teaches a method of thermal management for a gas turbine engine comprising the steps of: (1) providing a fuel 46; (2) communicating the fuel through a first liquid-to-liquid heat exchanger system 42 or 136 operable at a first maximum temperature; (3) communicating the fuel through a second liquid-to-liquid heat exchanger system 80 or 138 operable at a second maximum temperature, said second maximum temperature greater than said first maximum temperature; said step (2) further comprises the step of: communicating the fuel and an oil through the first liquid-to-liquid heat exchanger, the oil effective above approximately 325 degrees Fahrenheit and preventing the oil from exceeding approximately 325 degrees Fahrenheit (see col. 8, lines 13-38); communicating the oil within the first loop with an engine fan gear subsystem 142 (see e.g. Fig. 6); communicating the oil through an oil loop in communication with a subsystem which can not exceed approximately 325 degrees Fahrenheit; communicating

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the deoxygenated fuel from the first liquid-to-liquid heat exchanger to the second liquid-to-liquid heat exchanger. Coffinberry does not teach the fuel is deoxygenated. Sauer teaches using deoxygenated fuel for safety concerns. Spadaccini et al teach using deoxygenated fuel to prevent fuel coking and allow the temperature of the fuel to reach high temperatures including temperatures of up to 700 °C (col. 3, lines 32+) and using the fuel in cooling systems in an aircraft (col. 6, lines 54+); the deoxygenator 110 deoxygenates the fuel prior to delivery to the heat exchanger 106 of the gas turbine engine. Note that these high temperatures will inherently require the heat exchanger fluid circulating in the heat exchanger to be higher than the fuel temperature for heat to be rejected thereto. It would have been obvious to one of ordinary skill in the art to employ deoxygenated fuel for safety concerns and/or to prevent fuel coking and allow the temperature of the fuel to reach high temperatures. As for the oil being effective above 325 F, it is not clear whether the oil will still be effective at those temperatures. However, high temperature oil is old and well known in the art, as taught by Mullin even in the context of gas turbine engines (col. 2, lines 9+) and as admitted as being commercially available as including NYCO Paris GTO 7. It would have been obvious to one of ordinary skill in the art to employ a high temperature oil for enhanced thermal protection and/or to prevent oil breakdown. As for allowing the fuel to exceed 325, this is taught by Spadaccini who teaches allowing the fuel to reach temperatures above this range. It would have been obvious to one of ordinary skill in the art allow the fuel to

exceed this temperature due to the enhanced anti-coking properties of the deoxygenated fuel.

5. Claims 11-17, 19-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Coffinberry (4,020,632) in view of either Sauer (6,604,558) or Spadaccini et al (6,315,815) and optionally in view of Mullin (4,879,052), as applied above, and further in view of Smith (6,182,435). Coffinberry teaches various aspects of the claimed invention including fuel cooling the engine fan gear subsystem but does not teach cooling the aircraft generator subsystem. Smith teaches that the fuel/oil heat exchangers used on aircraft are used to cool both electrical generators and the gearboxes (col. 1, lines 30+). It would have been obvious to one of ordinary skill in the art to cool an electrical generator with the fuel/oil heat exchanger as taught by Smith, in order to cool another unit on the aircraft that requires cooling.

6. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Coffinberry (4,020,632) in view of either Sauer (6,604,558) or Spadaccini et al (6,315,815) and optionally in view of Mullin (4,879,052), as applied above, and further in view of Niggemann et al (6,182,435). Coffinberry teaches various aspects of the claimed invention but do not teach the pump after the first heat exchanger. Niggemann et al teach a pump 156 following the first heat exchanger 124 and prior to the second heat exchanger 122 is old and well known in the art. It would have been obvious to one of ordinary skill in the art to employ the pump following the first heat exchanger as a well known location for the pump in such fuel systems.

Response to Arguments

7. Applicant's arguments filed 11/02/2005 have been fully considered but they are not persuasive. Applicant's main argument with regard to Huang is that a 1.131 affidavit was filed to overcome this rejection. No such affidavit is on the record and hence the rejection remains outstanding.

8. In response to applicant's argument that Sauer is nonanalogous art, it has been held that a prior art reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the applicant was concerned, in order to be relied upon as a basis for rejection of the claimed invention. See *In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992). In this case, the Sauer reference is directed to deoxygenating the fuels of the aircraft. Applicant appears to miss the point of the Sauer reference. As at least the independent claims do not specifically require the deoxygenation occur on the aircraft, only that the fuel be deoxygenated prior to communication with the second heat exchanger. Sauer would teach filling the aircraft tank with deoxygenated fuel. As the timing of the deoxygenation is not claimed, Coffinberry operating with deoxygenated fuel in the fuel tank will meet the claimed limitations.

9. With regard to applicant's argument regarding Coffinberry and the oil, Spadducinni would teach one of ordinary skill in the art to operate the fuel at high temperatures. Coffinberry already teaches using a high temperature oil for the 2nd heat exchanger and it would have been obvious to one of ordinary skill in the art that

operation of the fuel at higher temperatures, e.g. 325 will inherently require a high temperature oil, because the oil rejects the heat to the fuel. In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

10. In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

11. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the

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advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Contact Information

Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Ted Kim whose telephone number is 571-272-4829. The Examiner can be reached on regular business hours before 5:00 pm, Monday to Thursday and every other Friday.

The fax numbers for the organization where this application is assigned are

571-273-8300 for Regular faxes and 571-273-8300 for After Final faxes.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Thorpe, can be reached at 571-272-4444.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist of Technology Center 3700, whose telephone number is 703-308-0861. General inquiries can also be directed to the Patents Assistance Center whose telephone number is 800-786-9199. Furthermore, a variety of online resources are available at <http://www.uspto.gov/main/patents.htm>



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